Remarks

Claims 1 and 33 have been amended, and new claim 35 has been added. Claims 1-35 remain in the application, and re-examination and reconsideration of the application are respectfully requested.

Claims 1-34 are rejected under 35 U.S.C. §103(a) as being unpatentable over Reschef et al. (U.S. Patent No. 6,321,337) in view of DeKoning et al. (U.S. Patent No. 6,823,472). Reschef et al. relates to a system for protecting operations of trusted internal networks. More specifically, referring to Figs. 1a and 1b, the invention relates to a security gateway system 10 positioned between an external, untrusted computer environment 16, for example, the internet, and an internal, trusted computer environment 12. As described at column 4, lines 27-59, the security gateway system 10 includes independently-controlled complimentary computer processing entities that insulate the trusted environment from the untrusted environment. These entities are referred to as internal and external robots 24, 26, with the external robot 26 being connected to the untrusted environment 16; and the internal robot 24 being connected to the trusted environment 12.

The robots 24, 26 can be implemented in two independent computers or reside within a single computer that is linked to both external and internal environments. The robots 24, 26 pass messages to each other over a dedicated communication link 28 using a transport protocol internal to the security unit. The external robot 26 converts messages received from the internet 16 into simplified messages by removing external environment transfer protocols and further reduces the content of the remaining messages to provide a simplified message. The internal robot 24 then converts the simplified message representation into one appropriate for use on the internal environment 12 by adding internal environment protocols suitable for use by applications operating on the internal computing environment. As noted in the Office Action, Reschef et al. does not teach a use of resource managers.

DeKoning et al. relates to a multiprocessor system for allocating use of shared resource memory by a shared resource manager. Referring to Fig. 1, multiple processors

102-106 are connected to a system bus 112 that is also connected to multiple shared resource memories 108. Shared resource managers (SRMs) 110 are dedicated to respective ones of the shared resource memories 108 that are also connected to the bus 112 (see col. 4, lines 35-36). In operation, one of the processors 102-106 via the bus 112 makes an allocation request to the SRMs 110 for access to a respective one of the shared resource memories. Using standard bus arbitration features, the SRMs 110 coordinate, via arbitration of the bus 112, exclusive use of the shared resource memories 108 by the one of the processors 102-106 (see col. 4, lines 35-36).

More specifically, referring to Fig. 2, to request use of a shared memory resource 108, a processor issues a read request to the SRM 110, which returns the contents of the next resource control block 210-214 via register 230. Thus, the next available resource is placed in register 230 for application to bus 112 via bus arbitration logic 200 that ensures temporary mutual exclusion of other processors until the read request for the next resource is completed. Further, the allocation pointer 206 is incremented as required for management of the list 204. To deallocate a resource, a processor issues a write request to the memory address or port of the SRM 110. The resource value is latched into register 230 by control logic 202. Again, bus arbitration logic 200 ensures required mutual exclusivity of the right of operation until completion of the deallocation of the supplied resource. Control logic 202 then stores the supplied resource in the next unused resource control block 210-214 presently pointed to by deallocation pointer 208. The deallocation pointer 208 is then incremented as required for circular management of the resource list 204.

It should be noted that Applicants' understanding of DeKoning et al. is contrary to the description in Paragraph 6 in the Office Action. Applicants submit that referring to Fig. 1 of DeKoning et al., the SRMs 110 are not located at a plurality of different addressable locations on the bus 112; and the SRMs 110 do not communicate with each other over the bus 112. Further, with the bus arbitration scheme, Applicants have found nothing in DeKoning et al. indicating that the SRMs 110 communicate with each other. Finally, in DeKoning et al., mutual exclusivity of the processors to the shared resource is

provided by arbitration of a multiprocessor bus 112; and there is no description or suggestion of a multiprocessor bus or a bus arbitration scheme in the present application.

In order to establish a prima facie case of obviousness, it is necessary that the Office Action present evidence, preferably in the form of some teaching, suggestion, incentive or inference in the applied prior art or, in the form of generally available knowledge, that one having ordinary skill in the art would have been led to arrive at the claimed invention.

The following remarks relate to amended claims 1 and 33 and new claim 35. A prima facie case of obviousness is not made because Reschef et al. and DeKoning et al. do not teach the following elements recited in claims 1, 33 and 35.

First, claims 1, 33 and 35 require a plurality of resource managers even with a single resource. Thus, resource managers are allocated relative to the addressable locations connected to the communication system and not relative to the number of shared resources as is described in DeKoning et al. In DeKoning et al., there is one SRM 110 for each of the shared resource memories 108, see col. 4, lines 35-36.

Second, claims 1, 33 and 35 requires that the resource managers be located at different ones of the addressable locations, that is, as clearly shown in Fig. 2, resource managers 32 are physically situated or located at different addressable locations or nodes 12, 14, 16, 18, connected to the communication system 24. In contrast, in DeKoning et al., the SRMs 110 are centrally located and connected to the bus 112 at a single location, which is logical in DeKoning et al. since the SRMs 110 are allocated on the basis of shared resource memories 108.

Third, claims 1, 33 and 35 requires that one resource manager communicate over the communication system 24 with another resource manger. In contrast, Applicants have found nothing in DeKoning et al. describing or suggesting that the SRMs 110 communicate with each other over the bus 112.

Fourth, claims 1, 33 and 35 requires that the plurality of resource managers arbitrate which one of the control programs is provided exclusive use of the resource. In contrast,
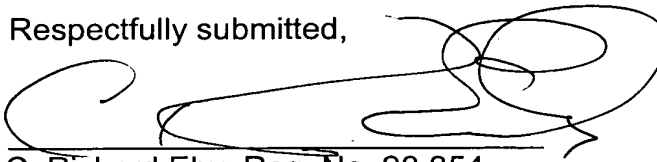
DeKoning et al. uses known bus arbitration logic to limit access of shared resource memory 108 to the processors by arbitrating activity on the bus 112, see col.5, lines 15-18.

The systems of claims 1, 33 and 35 provide a reliable interlock mechanism for sharing a resource that solves problems relating to deadlock and circular dependency for control programs running on separate controllers that utilize disparate operating systems and are connected only by a general purpose communications network. Using any general purpose communications system, for example, an Ethernet, does not require a multiprocessor bus on which mutual exclusion of access to an addressable location is provided by arbitrating the bus. Bus arbitration is not used or required. Further, the shared resource can be can be abstract, physical or logical, for example, a physical workspace shared by two machines. Also, there is no requirement that the shared resource be connectable to, or controlled by, a computer as is described in the cited references.

Enclosed is a check in the amount of $50 for one added claim. Also enclosed is a Petition for Extension of Time and a check in the amount of $120. Applicants do not believe that any other fees are due in connection with this submission. However, if such extension is due or any other fees are necessary, the Commissioner may consider this to be a request for such and charge any necessary fees to deposit account 23-3000.

Applicants respectfully submit that the application is now in condition for allowance and reconsideration of the application is respectfully requested. The Examiner is invited to contact the undersigned in order to resolve any outstanding issues and expedite the allowance of this application.

Respectfully submitted,

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